

Appln. No.: 09/942,835  
Amendment Dated March 17, 2004  
Reply to Office Action of December 17, 2003

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**Remarks/Arguments:**

Claims 1, 3, 7-11, 13-18, 20-21, 31-32 are pending in the above identified application. Claims 2, 4-6, 12 and 19 are cancelled. Claims 22-30 are withdrawn from consideration.

Claims 1, 2, 7 and 11 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With regard to claim 2, the rejection is overcome by the cancellation of claim 2.

The Office Action recites, "...it is not clear how the at least two gate electrodes define the at least two charge wells." With regard to claims 1 and 7, the rejection is overcome by amending claims 1 and 7 to recite, "...the at least two gate electrodes configured to define at least two charge wells, in the substrate, in response to a bias potential applied to the at least two gate electrodes..." With regard to claim 11, the rejection is overcome by amending claim 11 to use similar language

The Office Action further recites, "How is a non-stable inter-electrode gap different than a stabilized inter-electrode gap?" The explanation of electrode-gap stabilization is provided in paragraph [0069] of the present application. Stabilizing the inter-electrode gap prevents charge barriers from developing in the gaps and interfering with charge transfer between adjacent electrodes. With these amendments, claims 1, 2, 7 and 11 are no longer subject to rejection under 35 U.S.C. § 112, second paragraph.

Claims 1, 2, 31-32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fujii. With regard to claim 2, the rejection is overcome by the cancellation of claim 2.

With regard to claim 1, the Office Action recites:

"Fujii teaches (figs. 8 and 9) a charge coupled device made on a substrate of a first conductivity type (10), the charge coupled device comprising: a dielectric layer (12) overlaying at least a portion of the substrate, and at least two gate electrodes (42, 44) overlaying the dielectric layer, the at least two gate electrodes defining at least two charge wells (32) and (34, 36), the at least two gate electrodes being separated by an inter-electrode

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gap (the gap between 42 and 44) and means for stabilizing the inter-electrode gap."

Applicants respectfully disagree with this analysis as it pertains to the subject application. It should be noted that, in Fujii:

- (42) is not a gate electrode. Rather, it is an anti-blooming electrode, presenting a substantial difference in structure and operation of the present invention and Fujii. The two gate electrodes in Fujii are consecutive pairs of electrodes (44); and
- the two charge wells are not (32) and (34,36). (32) is the substrate, which functions as a buried channel transmission layer, and (34,36) are the virtual electrodes. The charge wells in Fujii correspond to the areas directly under the gate electrodes (44), and are not distinctly pointed out by Fujii.

Furthermore, claim 1 recites, in part, "means for stabilizing the inter-electrode gap." The Examiner's discussion of claim 1 on page 2 of the Office Action does not identify the element(s) in Fujii that meet this recitation. Furthermore, Fujii does not disclose or suggest any structure that performs this stabilizing function. Rather, the element(s) in Fujii comprise a virtual gate and not a gate stabilization. Paragraph [0051] of the present application points out that virtual gates are formed by P-diffusions in the N-well channel. The present application uses a gate stabilization method, which is either an N-implant in an N-substrate (or N-well) or fringing fields developed in response to respective bias voltages applied to two gate electrodes. (see paragraph [0053]). Furthermore, Fujii does not disclose putting the charge well in the substrate. Finally, because Fujii does not describe a CMOS process, he cannot describe a CMOS gate oxide as required by claim 1. Therefore, claim 1 is not subject to rejection under 35 U.S.C. § 103(a) as being unpatentable over Fujii.

With regard to claim 31, the rejection is overcome by the amendment to claim 31. Claim 31 includes all the features of claim 11 from which it depends. Thus, claim 31 is not subject to rejection under 35 U.S.C. § 103(a) in view of Fujii for the reasons set forth below concerning the rejection of claim 11.

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Claim 32 includes all the features of claim 1 from which it depends. Thus, claim 32 is not subject to rejection under 35 U.S.C. § 103 (a) in view of Fujii for the reasons set forth above.

Claims 3-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fujii in view of Ohsawa et al. With regard to claim 12, the rejection is overcome by the cancellation of claim 12.

With regard to Claim 3, the Office Action recites:

Fujii teaches (figs. 8 and 9) substantially the entire claimed structure of claim 1 above except explicitly stating that a further dielectric layer formed over the at least two gate electrodes; and a further gate electrode formed overlying the further dielectric layer and positioned over the inter-electrode gap.

The rejection is overcome by amending claim 1 to recite:

apparatus for stabilizing the inter-electrode gap selected from a group consisting of:

a semiconductor region of the first conductivity type but having a different dopant concentration than the substrate, in the inter-electrode gap; and

means for applying respective bias potentials to the at least two gate electrodes, the bias potentials being sufficient to cause a fringing field to extend across the inter-electrode gap from at least one of the at least two gate electrodes.

As described above, Fujii does not disclose or suggest either apparatus for stabilizing the inter-electrode gap.

The Office Action further recites, "Ohsawa teaches forming dielectric layer (44) over at least two gate electrodes (80) and forming a further electrode (82a) overlying the further dielectric layer and positioned over the inter-electrode gap (region between electrodes 80). Ohsawa et al. however, do not disclose or suggest the gate stabilization apparatus recited in amended claim 1, from which claim 3-8 depend.

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With regard to claim 7, the Office Action states that "the combined structure of Fujii and Ohsawa inherently cause fringing fields as claimed in the gap region." The requirements for an item to be inherent in a disclosure are well settled.

"In order for a disclosure to be inherent, 'the missing descriptive matter must necessarily be present in the [original] application's specification such that one skilled in the art would recognize such disclosure.'"<sup>1</sup>

The Board stated, and the Solicitor argues that Gulag's technical explanation of how his invention works establishes that any "intermittently spaced" adhesive would inherently achieve the benefits of the invention.....

An Inventor's explanation of how the invention works does not render obvious that which is otherwise unobvious. Since the prior art does not show the spaced zones of adhesive that are provided by Gulag, his teaching that the spacing permits the fabric to bunch and stretch is not evidence of obviousness. If anything, this teaching supports the unobviousness of Gulag's discovery that spacing the adhesive reduces elastic decay....<sup>2</sup>

There is no disclosure in Fujii, Ohsawa et al., or their combination that fringing fields are generated or that the fringing fields can be effectively used as stabilization means. Neither Fujii nor Ohsawa disclose or suggest the existence of fringing fields or their use in stabilizing the inter electrode gap, the only suggestion to generate or use these fields comes from Applicants' disclosure. It is improper to use Applicants' own disclosure to render their claims obvious. Accordingly, claim 7 is not subject to rejection as being unpatentable over Fujii in view of Ohsawa et al.

With regard to claim 8-10, the Office Action uses the same language as a basis for the rejections, reciting, "...Fujii teaches substantially the entire claimed structure of claim 1..." These rejections are overcome by amending claim 1 to recite the same features as stated above. Thus, claims 8-10 are not subject to rejection under 35 U.S.C. § 103(a) in view of Fujii and Ohsawa et al.

<sup>1</sup> *TurboCare Division v. General Electric Co.* 60 USPQ2d 1017, 1023 (Fed. Cir. 2001), quoting *Tronzo v. Biomet, Inc.* 47 USPQ2d 1829, 1834 (Fed. Cir. 1998)

<sup>2</sup> *In re Gulag* 62 USPQ2d 1151, 1155 (Fed. Cir. 2002)

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With regard to claim 11, the rejection is overcome by amending claim 11 to recite, "...at least two gate electrodes overlaying the first dielectric layer and configured to define at least two charge wells, respectively, in the semiconductor layer, in response to a bias potential applied to the at least two gate electrodes..." and

apparatus for stabilizing the inter-electrode gap selected from a group consisting of:

a semiconductor region of the first conductivity type but having a different dopant concentration than the substrate, in the inter-electrode gap; and

means for applying respective bias potentials to the at least two gate electrodes, the bias potentials being sufficient to cause a fringing field to extend across the inter-electrode gap from at least one of the at least two gate electrodes.

As described above, Fujii nor Ohsawa et al. do not disclose or suggest the features stated above. Accordingly, claim 11 is not subject to rejection under 35 U.S.C. § 103 (a) as being unpatentable over Fujii in view of Ohsawa et al.

Claims 13-15 depend from claim 11 and are not subject to rejection under 35 U.S.C. § 103 (a) as being unpatentable over Fujii in view of Ohsawa et al. for at least the same reasons as claim 11.

Claims 16-18, 20-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujii in view of Marsh et al.

With regard to claims 18, 20-21, the Office Action recites "Fujii does not teach back illuminated imager is shielded from photocarriers generated in response to photons received at the backside of the substrate by the semiconductor junction." The Office Action further recites, "Back illuminated imager is conventional structure that is well known in the art. Furthermore providing shielding structure is also known in the art."

This use of Official Notice is not consistent with USPTO policy, as stated in the memorandum of February 21, 2002 from Stephen G. Kunin, Deputy Commissioner for Patent

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Examination Policy to the Patent Examining Corps Technology Center Directors. In The memorandum is entitled: "Procedures for relying on facts which are not of record as common knowledge or for taking Official Notice," it is stated:

Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. . .

It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.

It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. . . (emphasis in original)

Applicants respectfully traverse the Official Notice, common-knowledge, assertion upon which this rejection was based. There is no evidence in the record that providing a P-N junction as a shielding structure for a back illuminated imager is well known in the art

If the Examiner continues to assert that this element of claim 18, 20-21 is well known, Applicants respectfully request that a "citation to some reference work recognized as standard in the pertinent art" be provided.

Claims 16 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujii in view of Marsh.

Marsh pertains to a method of providing feedback from a sports apparatus having a surface for impacting an object. More specifically, a golf club is disclosed as including a pressure sensor on the head of the club, which detects and measures the force of impact, relaying the calculated results to the user via an LED display. Marsh uses analog-to-digital converters in sampling data from the sensors on the golf club.

The subject application pertains to a CMOS-CCD imaging system, and falls well beyond the field of endeavor of the Marsh invention. Additionally, applicants have not found any

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disclosure in Fujii of an analog to digital converter. Therefore, the Office Action has relied upon hindsight gained from applicants' disclosure to reject these claims.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure.* (emphasis added MPEP § 706.02(j)).

Here, the Office Action has relied upon hindsight to arrive at the determination of obviousness. It is impermissible to use the claimed invention as an instruction manual or template to piece together the teachings of the prior art so that the claimed invention is rendered obvious. The Court has stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fritch*, 23 USPQ 2d 1780, 1783, 1784 (Fed. Cir. 1992).

The Examiner may not combine references based on hindsight gained from the subject invention. Because no reference has been cited which suggests that the two technologies can be combined, the combination can not be obvious in view of the cited references; the only motivation to combine these technologies comes from Applicants' own disclosure. The failure to find any reference that combines CCD and CMOS technologies demonstrates the accuracy of applicants' assertions in their specification and emphasizes the Office Action's reliance on hindsight to make this rejection.

Accordingly, claims 16 and 17 are not subject to rejection as being unpatentable over Fujii in view of Marsh.

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In view of the foregoing amendments and remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1, 3, 7-11, 13-18, 20, 21, 31 and 32.

Respectfully submitted,



Kenneth N. Nigon, Reg. No. 31,549  
Attorney(s) for Applicant(s)

KNN/tmb

Dated: March 17, 2004

P.O. Box 980  
Valley Forge, PA 19482  
(610) 407-0700

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March 17, 2004



Tonya M. Berger